

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

In response to outstanding formal grounds of objection/rejection, the Abstract, specification and claims have been amended above so as to place them in more traditional US format. Accordingly, all outstanding formal issues are now believed to have been overcome.

With respect to the rejection of claim 3 under 35 U.S.C. §112, second paragraph, it is respectfully noted that the Examiner has mis-construed the original claim language which clearly recited a limitation wherein the coil is wound so as to comprise two or more portions – each of which portion has fewer than n turns in each layer. New independent claim 7 corresponds in substantial part to original claim 3 and somewhat different language has been used to try to avoid the Examiner's mis-construal.

The exemplary embodiment representing such claimed invention is depicted at Figure 2c. As can be visualized in Figure 2c, the entire coil has three layers and each layer has seventeen turns. However, because of the interconnections between turns, the coil has been effectively divided into two portions 20, 21 (portion 20 being depicted with cross-hatching for each turn). In particular, at the boundary between portions 20 and 21, the interconnections between turns as depicted by arrows in the Figures will be seen to have changed with respect to Figures 2a and/or 2b such that adjacent turns at the boundary between portions 20, 21 are now connected to turns in different layers than their own. In the exemplary embodiment of Figure 2c, portion 20 has three layers with nine turns in each layer and portion 21 has three layers with eight turns in each

layer. This is, once again, in the context of a single MRI shim coil which overall has three layers, each of which has seventeen turns.

With this better understanding of the applicant's described exemplary embodiment, it is hoped that the Examiner can readily appreciate the irrelevance of the cited prior art.

In particular, the rejection of claims 1-4 under 35 U.S.C. §102 as allegedly anticipated by Kitamura '232 and the rejection of claims 5 and 6 under 35 U.S.C. §103 as allegedly being made "obvious" based on the same Kitamura '232 reference in view of "applicant's own admitted prior art" are all respectively traversed.

At the outset, it is noted that MRI electromagnetic coils are in no way analogous to conventional transformer or choke coils or other types of electrical circuit inductances. MRI coils are specifically designed so as to provide a uniform very intense background field on which is controllably superimposed linear gradients in up to three orthogonal directions throughout the imaged volume during an MRI scan sequence wherein data is gathered for imaging objects such as the internal organs of the human body.

MRI shim coils are employed in this context of MRI with very special design characteristics so as to enhance the uniformity of the static field and/or the linearity of the gradient fields throughout the volume to be imaged. Those skilled in the art of designing MRI coils of all types (including MRI shim coils) would never be even tempted to look for solutions to their unique problems in the general art of transformer, choke, inductor design – where uniformity and/or linearity of magnetic field spatial distributions (i.e., with respect to space are of little if any interest.

The Examiner asserts that Kitamura discloses two coil patterns which are used in the preferred embodiment and three coil patterns or more may be deposited with insulating layers therebetween. The Examiner also asserts that the number of coil patterns in Kitamura is not limited to a specified number as long as it is one or more.

Kitamura has no relevance to MRI and is concerned with coils for transformers and chokes. It is the essence of Kitamura's disclosure (e.g., a transformer or a choke to block common mode signals) that there are two electrically distinct coils separated by insulation. In contrast the applicant claims an arrangement of a single electrically continuous MRI shim winding wound (i.e., with interconnected turns) to provide different portions as defined in original claim 3 (now new claim 7). Kitamura also does not disclose even in his context the concept of sub-dividing coil turns in a single coil entity into separate portions.

Dependent claims 8 and 9 are believed to add yet further patentable distinction to the claimed combination when considered as a whole – as they must be under 35 U.S.C. §103.

Attention is also directed to new claims 10-15. New independent claim 10 is directed to an MRI shim coil wherein the turns are interconnected so as to define plural coil portions by connecting at least one turn at a boundary of one coil portion to another turn located in a different layer at the boundary in an adjacent different coil portion. New independent method claim 13 includes analogous recitations in method step format for increasing the self-resonance frequency of an MRI shim coil. Dependent claims 11, 12, 14 and 15 are believed to add additional patentable distinction to the overall claimed combination of independent claims 10 and 13 respectively.

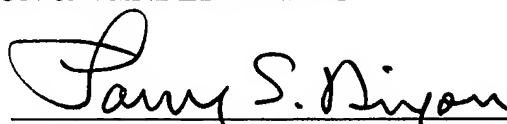
Attention is also directed to the attached Form PTO-1449 together with a copy of an EPO Search Report recently issued in a counterpart application and a copy of each reference cited therein. The IDS fee for this stage of prosecution is also attached and official consideration and citation of each such reference is respectfully requested.

The only reference cited herein as allegedly having any relevance to original claim 3 is GB '254. However, this is a relatively old UK patent specification relating to a line output transformer for a television receiver. It is clearly in no way analogous to an MRI shim coil or any other aspect of an MRI apparatus coil and it is believed that the EPO will agree that it does not in any way teach or suggest the inventions now described in applicant's independent claim 7, 10 and 13.

Accordingly, this entire application is now believed to be in allowable condition and a formal Notice to that effect is respectfully solicited.

Respectfully submitted,

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PROPOSED DRAWING AMENDMENTS
FOR SN 10/812,918

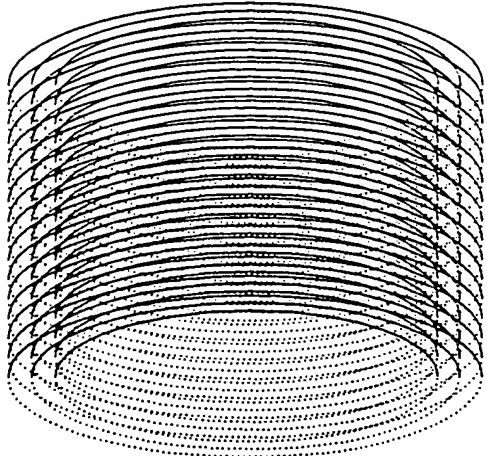
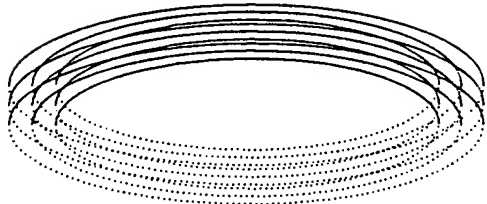
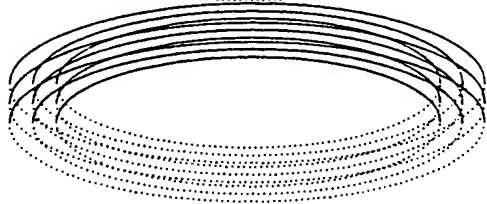
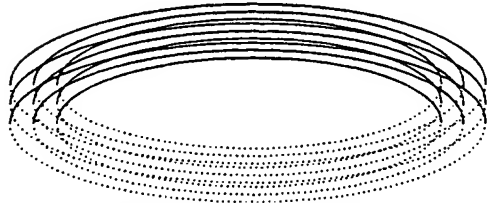
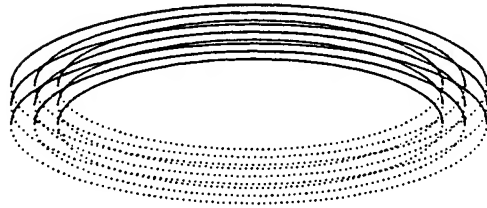
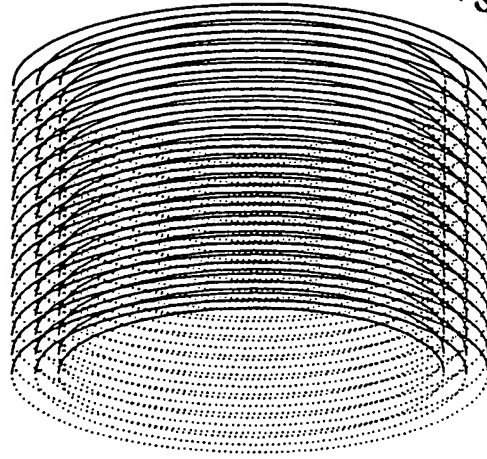
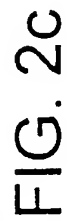
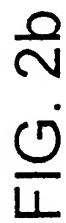
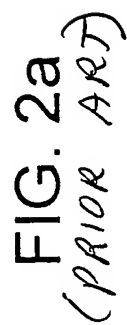


FIG. 1
(PRIOR ART)



AMENDMENTS TO THE DRAWINGS

Proposed amendments adding “prior art” legends to Figures 1 and 2a in red ink are attached together with proposed new substitute drawings incorporating those changes.

Attachment: Replacement Sheet(s)
Annotated Sheet Showing Changes